

CLAIMS

1. A resist composition, comprising a resin component (A) that displays changed alkali solubility under action of acid, and an acid generator component (B) that generates acid on exposure, which is used in a shrink process comprising the steps of: providing a resist layer formed from said resist composition on top of a support, forming a resist pattern in said resist layer, providing a water-soluble coating formed from a water-soluble coating formation agent comprising a water-soluble polymer on top of said resist pattern, and shrinking said water-soluble coating by heating, thereby narrowing a spacing of said resist pattern, wherein

said component (A) is a resin comprising structural units derived from a (meth)acrylate ester, and exhibits a glass transition temperature that falls within a range from 120 to 170°C.

2. A resist composition according to claim 1, wherein said component (A) comprises both structural units derived from an acrylate ester and structural units derived from a methacrylate ester.

3. A resist composition according to claim 1, wherein said component (A) comprises a copolymer comprising both structural units derived from an acrylate ester and structural units derived from a methacrylate ester.

4. A resist composition according to claim 1, wherein said component (A) is either one of:

a mixed resin comprising a polymer that comprises both structural units derived from an acrylate ester and structural units derived from a methacrylate ester, and a polymer that comprises one of either structural units derived from an acrylate ester or structural units derived from a methacrylate ester, but not another, and

a mixed resin comprising a polymer that comprises structural units derived from an acrylate ester but no structural units derived from a methacrylate ester, and a polymer that comprises structural units derived from a methacrylate ester but no structural units derived from an acrylate ester.

5. A resist composition according to claim 4, wherein said component (A) comprises a mixed resin of:

a copolymer (i) comprising structural units ($a1^a$) derived from an acrylate ester containing an acid dissociable, dissolution inhibiting group, structural units ($a2^a$) derived from an acrylate ester containing a lactone unit, and structural units ($a3^a$) derived from an acrylate ester containing a hydroxyl group, and

a copolymer (ii) comprising structural units ($a1^m$) derived from a methacrylate ester containing an acid dissociable, dissolution inhibiting group, structural units ($a2^m$) derived from a methacrylate ester containing a lactone unit, and structural units ($a3^a$) derived from an acrylate ester containing a hydroxyl group.

6. A resist composition according to claim 1, wherein said component (A) is a mixed resin comprising:

a polymer comprising (meth)acrylate structural units derived from a γ -butyrolactone ester of (meth)acrylic acid, but comprising no (meth)acrylate structural units derived from a norbornane lactone ester of (meth)acrylic acid, and

a polymer comprising (meth)acrylate structural units derived from a norbornane lactone ester of (meth)acrylic acid, but comprising no (meth)acrylate structural units derived from a γ -butyrolactone ester of (meth)acrylic acid.

7. A resist composition according to claim 1, wherein said component (B) is an onium salt with a fluorinated alkylsulfonate ion as an anion.
8. A resist composition according to claim 1, further comprising a nitrogen-containing compound.
9. A laminate, wherein a resist pattern formed from a resist composition according to claim 1, and a water-soluble coating formed from a water-soluble coating formation agent comprising a water-soluble polymer are laminated on top of a support.
10. A method for forming a resist pattern, comprising the steps of: providing a resist layer formed from a resist composition on top of a support, forming a resist pattern in said resist layer, and subsequently conducting a shrink process by providing a water-soluble coating formed from a water-soluble coating formation agent comprising a water-soluble polymer on top of said resist pattern, and shrinking said water-soluble coating by heating, thereby narrowing a spacing of said resist pattern, wherein
a resist composition according to claim 1 is used as said resist composition.
11. A method for forming a resist pattern according to claim 10, wherein said water-soluble polymer is selected from a group consisting of acrylic-based polymers, vinyl-

based polymers, cellulose derivatives, alkylene glycol-based polymers, urea-based polymers, melamine-based polymers, epoxy-based polymers, and amide-based polymers.

12. A method for forming a resist pattern according to claim 11, wherein said water-soluble polymer comprises structural units derived from acrylic acid and structural units derived from vinylpyrrolidone.

13. A method for forming a resist pattern according to claim 10, wherein said water-soluble coating formation agent further comprises a water-soluble amine and/or a surfactant.